Measuring Depth of Thought in Decision Making

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I. Project Overview & Hypotheses

The degree to which individuals engage in deep thought varies as a function of stable individual differences as well as varying situational factors. While a strong set of measures for assessing individual differences (e.g., CRT; Frederick, 2005; AOT; Baron, 1993) are widely used, there is a relative paucity of measures for assessing how situational factors, such as distractions or mood, influence depth of thought.

The *Applying Decision Rules* (ADR) task, introduced by Bruine de Bruin, Parker, & Fischhoff (2007) measures the ability to follow decision rules, a key component of decision making competence. Building on their work, we hypothesized that the ADR might also constitute a valid, situationally-sensitive, and adaptable tool for gauging depth of thought in decision making.

Overarching Hypothesis

To the extent that the ADR can serve as a valid, situationally-sensitive measure for depth of processing, performance on the ADR task should *decrease* when decision-makers complete the task under cognitive load (Study 1) and *increase* when decision makers complete the task under heightened motivation for accuracy (Study 2).

To the extent that the task can serve in a variety of decision contexts, then performance on the task should vary not only in response to cognitive constraints or motivation but also in response to emotion (Study 3).

II. Example of the *Applying Decision Rules (ADR)* task

Please use the following evaluation scale to answer the question.

Ratings				
"Very Low"	"Low"	"Medium"	"High"	"Very High"
1	2	3	4	5

"Suppose Brian wants to select the camera with the highest number of ratings greater than "Medium". Which one of the following cameras would Brian prefer?"

		Features				
		Sensor	Film Resolution	Low-Light Performance	Reliability of Brand	Price
Cameras	A	5	4	2	1	$769
	B	5	5	3	3	$769
	C	5	2	4	4	$769
	D	1	5	5	3	$769
	E	4	5	1	1	$769

III. Method and Results (All Studies Pre-Registered; Data Available)

Study 1: Is ADR performance sensitive to cognitive load constraints?

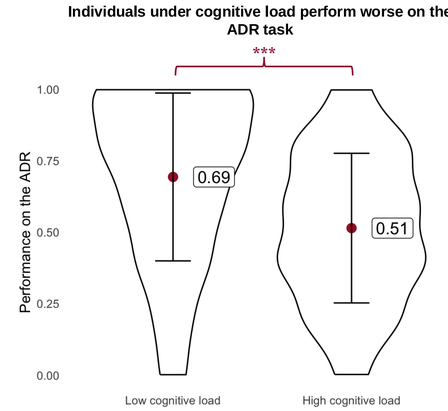
Method 1-factor, 2-levels (control, cognitive load) between-subjects experiment
(N = 195 adults, Prolific)

Cognitive Load manipulation (adapted from Gilbert, Tafarodi & Malone, 1993)

- Low Cognitive Load Condition: Participants instructed to ignore scrolling list of animal names
- High Cognitive Load Condition: Participants instructed to click a button whenever a certain word appeared in the list

Results

As hypothesized, individuals in the cognitive load condition (vs. control) performed *worse* on the ADR task (d = .63, p < .001).



Study 2: Is ADR performance sensitive to accuracy incentives?

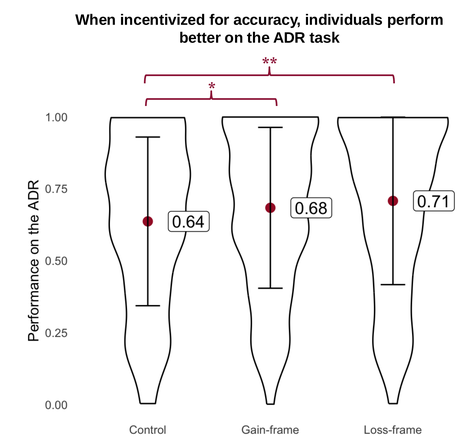
Method 1-factor, 3-levels (control, gain-frame, loss-frame) between-subjects experiment
(N = 594 adults, Prolific)

Incentive manipulation (Carpenter and Munro, 2022; max. potential earnings equal across frames)

- Control: Not incentivized
- Gain-frame: Potential to earn an extra $.50 for each correct answer
- Loss-frame: Endowment of $2.50 prior to task, but $.50 deducted for each incorrect answer

Results

Incentives for accuracy *increased* performance on the ADR (vs. control), with the loss-frame (d = .24; p < .01) showing stronger effects than gain-frame (d = .16; p = .049).



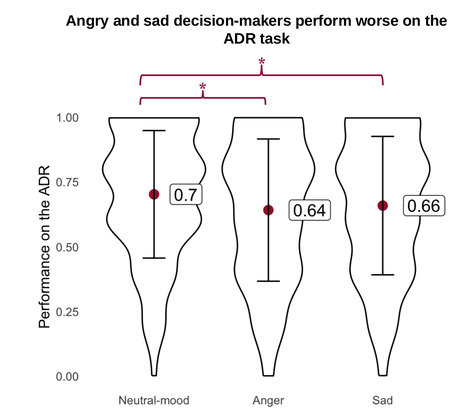
Study 3: Is ADR performance sensitive to negative mood?

Method 1-factor, 3-levels (neutral, sad, anger) between-subjects experiment
(N = 577 adults, Prolific)

Emotion manipulation (Small & Lerner, 2008)
Participants watched an approx. 2-min clip that elicits the target emotion. Then, participants wrote about a similar emotional experience.

Results

- Angry decision-makers (vs. neutral-mood) performed worse on the ADR task (d = .24, p = .01).
- Sad decision-makers (vs. neutral-mood) also performed worse on the ADR task (d = .17, p = .05).



IV. Conclusion and Implications

- Across three experiments, ADR performance responded to situational constraints as predicted.
- The ADR task can serve as a state-based measure, complementing trait-based measures for depth of thought.
- Future research may use the ADR when designing optimal decision environments that elicit relative deep versus shallow thought.